High Et Tail
- LOSS 2 vs 1 in CMSIM -

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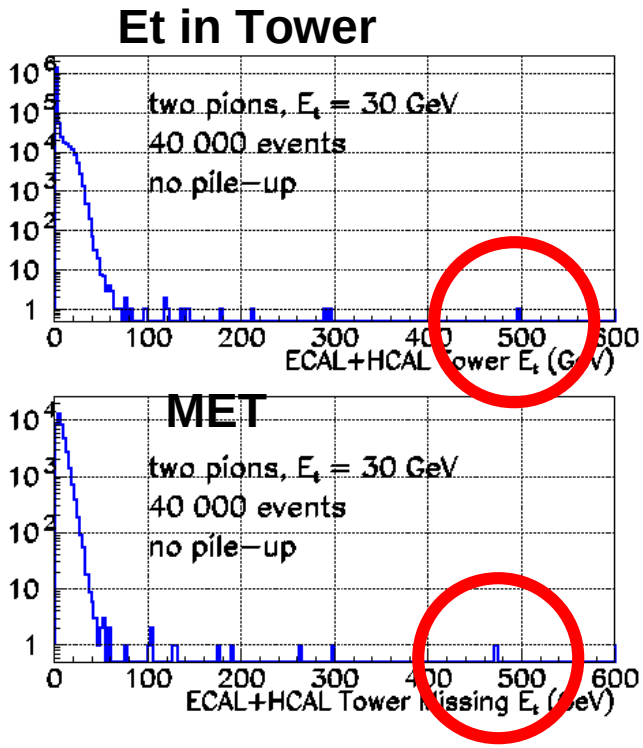
High Et Tail
(Shown by Pal on 01-Aug-01)

Et=30GeV pion



5GeV energy loss in scintillator in one step in GEANT

- 0–60 GeV
  - amplitude drops by 4 orders of magnitude
- 60–500 GeV
  - 200 GeV is needed for drop by 1 magnitude
- good events
  - ~100–300 HCAL hits
  - energy sum ~ 0.1–1.0 GeV
- bad events
  - 1 extra giant HCAL hit, E ~1–5 GeV
  - come from GEANT (bug / feature ?)
  - Shuichi sees them in the fz files so they come from cmsim

5GEV * (sampling weight) ➔ 500GeV

Energy Loss in HCAL with GEANT

LOSS=2 (current CMSIM)

- Continuous energy loss without generation of delta-rays and full Landau-Vavilov-Gauss fluctuation.
  - Good for large solid volume.
    - delta-rays are absorbed completely in the material.

LOSS=1

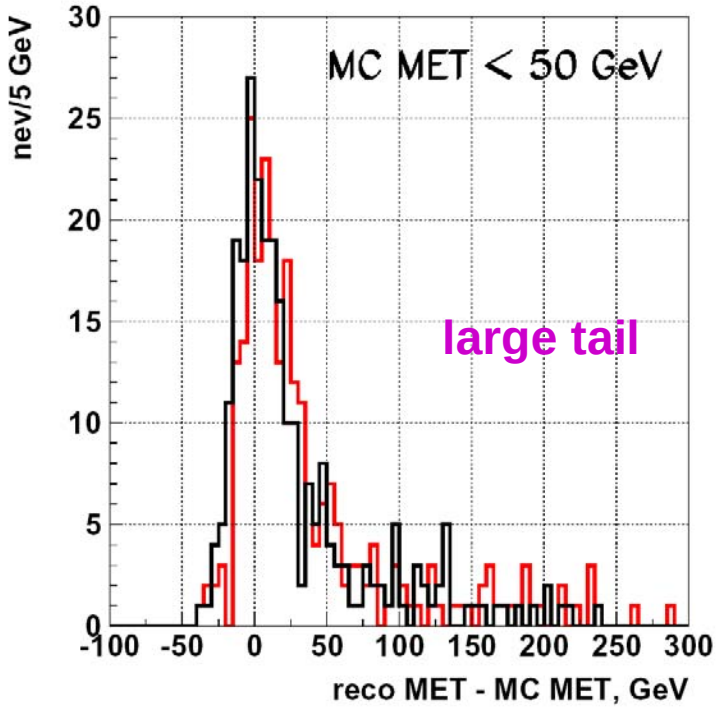
- Continuous energy loss with generation of delta-rays above DCUTE and restricted Landau fluctuation below DCUTE.
  - Good for thin material (sampling calorimeter)
    - delta-rays escape from the material.

CMS122_hcfix

- LOSS=1 in HCAL
- Sunanda/Veikko will release the version
- Do we want the fix in earlier versions?

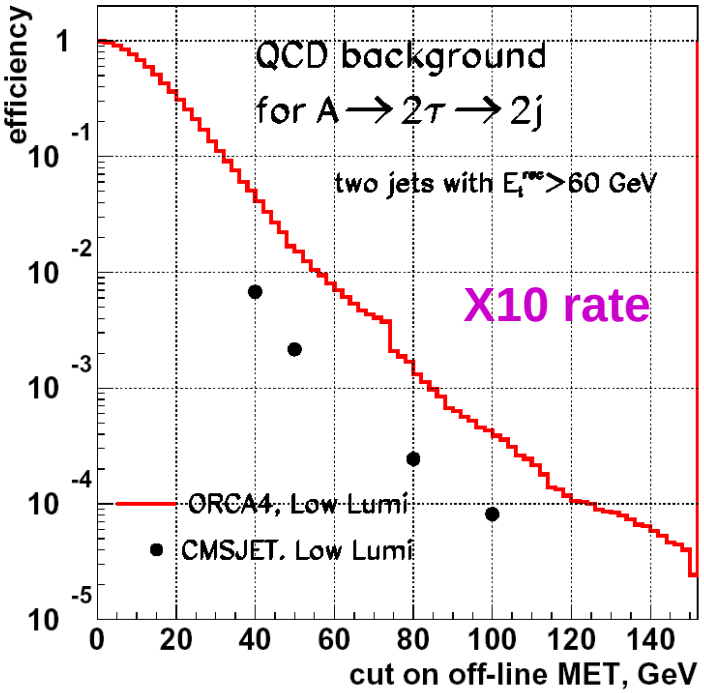
Impact of the problem?

MET in mSUGRA sample



(Nikitenko)

MET in QCD events



(Nikitenko)

- **Are these going to be improved with the fix?**
- **Pal is looking for fix for existing data sets.**